

Aviation News

MCGRAW-HILL PUBLISHING COMPANY, INC.

JULY 22, 1946



First Twin-Engine Commercial Helicopter: Designed to carry 10 passengers plus pilot and co-pilot, or to handle cargo loads of 1 ton or more, the forthcoming Kellett KH-2 helicopter is expected to be the world's first commercial twin-engined helicopter. It will use intermeshing twin rotors with 65 ft. diameter, and will operate from areas the size of a baseball diamond at 90 mph. cruising speed, or 118 mph. top speed, the manufacturer, Kellett Aircraft Corp., North Wales, Penna., estimates. (See story on page 8)

Grounding of Constellations Disrupts Air Services

Fire causes were diverse, according to early indications as tests begin.....Page 7

Kilgore Research Bill Passes Senate, Goes to House

Calls for President-appointed board; patent rights rouse industry opposition.....Page 11

Non-Sched Carriers File Operations Data With CAB

About 20 percent of unscheduled lines meet July 15 report deadline.....Page 17

Expect Mail-Pay Ruling to Give 25c. Rate to Feeders

New lines will need higher payment; traffic calculations too rosy.....Page 34

The Birdmen's Perch

By Major Al Williamson, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Refg., Pittsburgh 20, Pa.

But we never mention that we're fond
of aviation?

And all its wonderful people!

Like the wonderful engineers who
perfected the Navy's wonderful carrier
crossing traps. But discovered that the
two propellers caused a tremendous effec-
t—like traveling slowly in the oppo-
site direction to the air propeller, for
instance—which made the oldads
and sailors expect palms down, green,
and downcast!



And the wonderful girl (as known as
goodwill female workers at the opposite
end) who planted down down and then
up a surplus P-51! Report P-51!

And the wonderful laundry that picks
up and delivers laundry and dry cleaning
right at home, by plane!

And the wonderful telephone who
put an immediate hold on his phone to
answer repair emergencies when he
was overseas!

Yesss, we love every wonderful one
of 'em!

We also love the wonderful Alford
pawson who makes GulfRef's the
wonderful lubricant to us.

WHEN MAGNETOS HAVE BEEN
TESTED SEPARATELY AND YOU
GET APPROXIMATELY THE SAME

You probably know that we talk in
the additional refining steps after the oil
has already been refined. May be because
of the additional cost involved, may be
just a great deal of difference in the final product
even though we do add some that the
Alford Process does not even consider and
that's the reason that our

World War II bombers used shale
rotters and shale dust as "fuze expelli-
tor" shells. They were operated by the
pilot and designed to reduce what re-
mained after incendiary bombs were dropped
through the plane's bomb bay covers?

Well, sir, when we Alford Process is
up to the point it's already refined by
separation methods—say we've got a
whole quart and a half of separation
leaving only 1/2 a quart of GulfRef oil.
And who gets your lubrication with
superior GulfRef? GulfRef Oil!

SAILOR-SET...PART 2

We were telling you last month about
Gulf's sailor-set which makes don't say
I'm lost.

You know what a don't say the blue
with someone waving up an engine and
the word blowing the wrong way, don't
you?

Well, with GulfRef-Sailor-on the ground
don'ts happen. When separation is
achieved, cleaning and cleaning results
buildup is minimized and so is loss per
minimizing of the total due to blow
away.

And a simple application of this dis-
tilling operation often takes a whole year. It
doesn't require. It doesn't wash away
soot.

Want some more information? Drop
us a call.

LITTLE KNOWN FACTS DEPT.

Here's another month goes by with no
State Grade Gulf Refs or The Little
Known Facts About Gulf-Kerosene Products
Department.

Meanwhile, here are the new Gulf

Folks (comes next) and the "Folks"
that were there when tank:

Sabine Hatchet (P-5737), 250 P-51s

Ace, N.Y.C., is now a Gulf Pilot

World War II bombers used shale
rotters and shale dust as "fuze expelli-
tor" shells. They were operated by the
pilot and designed to reduce what re-
mained after incendiary bombs were dropped
through the plane's bomb bay covers?

Now about that:

And William Murphy, 281 Forty Seven,

Midway At., Mass., is now a Gulf Pilot

(he) because he deserved it.



"I used to fantasize longer in the American
Station to New York than I did to the
from New York to Boston, according
to altitude schedules. Reason: Prevalence
of altitude schedules."

Okay, now you say, Yea, YOG—
Mail your "Folks" to the address above.

Gulf Oil Corporation and Gulf
Refining Company...Makers of

GULF
AVIATION
PRODUCTS

SCOP IN IT, IN EACH
OF YOUR SPARKPLUGS AND YOU
GET APPROXIMATELY THE SAME

TAKE GULF-CLEARED
AND WAITING THAT MARSH-
EIGHT MEET NEED OF THE OCTANE

GOOD GULF AVIATION
GASOLINE!



THE AVIATION NEWS

Washington Observer



Commission, voted that his group will withhold action
on the bill until Henningsen and Baldwin return and
readily on the P.O.'s overall policy on mail service.
Congress may adjourn on the weekend. Railroad auth-
orities have work objected to the lowering of the
existing rate, which would capture a considerable volume
of the mail now shipped by rail.

BRIDGES DEFENDS AIR FORCE—The road
damage inflicted by the AAF during the war could
have been inflicted by 100 aircraft, if equipped with
nuclear bombs, according to New Hampshire Sen.
Stiles Bridges. In a Senate speech concerning weapons
to reduce the effectiveness of the bombs and the AAF—
at the time of creation of the B-52s—by people
... trying to pull the wool over the eyes of America
for their own purposes." Bridges reported that during
the war the AAF dropped a rough total of 2,000,000
tons of bombs. The U.S. could now drop the same effective
weight of explosives, he added, against 100 aircraft,
each carrying one nuclear bomb. The 100-aircraft strike would
kill off 30,000,000, he said, and defeat in one stroke
the notion in which it was devised.

SAFETY BUREAU GROWS—CAA's Safety Bureau,
concerned with uncessant demands on an untrained personnel
in scheduled and non-scheduled operations
grow and in many areas increased through changes in
safety investigation methods (Aviation News, April
22). The bureau plans for expansion of its staff and
make changes in its organization chart. These can
temperate increase in personnel of all three divisions—
safety analysis, safety rules, and accident statistics
groups, particularly the addition of six men to the
16 field investigators now in the accident investigation
division, and establishment of a Bureau office at Anchorage,
Alaska. The Bureau has had a small untrained personnel
of 62, including technical help, but hopes that
recent Congressional appropriations will permit its
enlargement to 116.

DECENTRALIZATION IN AGAINST—Industries
resist it as it is going to be confronted with the task
of decentralizing the aircraft industry, on the wake
of the DOD's report on possible productive steps against
war bonds. The report declared a need for decentraliz-
ing industrial and medical facilities. This subject, as
it pertains to aircraft, has been debated for months,
following an explanation to the Army that the aircraft
industry did not oppose decentralization provided it in-
cluded all industry, and not just itself (see article).



PAN AMERICAN WORLD AIRWAYS

orders a fleet of 20 new Convair-240's!

PAN AMERICAN WORLD AIRWAYS, with its globe-girding network of air routes, is another major airline ordering a fleet of America's most advanced jetliners—the Convair-240.

This order arrived the Convair-240 will be used for a new type of transport plane, to supplement its huge 4-engine ships—and to offer speed and advanced comfort. Return to the air traveling

public as flights of international range.

It won't be unusual that in search for such new airways, Pan American should turn to Consolidated-Vultee—the company which designed and built the famed Liberator bomber, the Catalina Patrol bomber, the Coronado, and other well-known war planes—the company which operated a vast transpacific military airbase service for the Air Forces

port Convair during World War II.

The wonderful new Convair-240 airplane will carry 49 passengers at 300 miles per hour and with a new high standard in travel comfort and convenience.

Below, for example, you'll find ten of the many reasons why your first flight in the modern new Convair-240 airplane will be an experience you'll want to repeat over and over again:

CONSOLIDATED VULTEE AIRCRAFT CORPORATION

Burbank, California • Revenue, California • Wayne, Michigan (Detroit District) • Fort Worth, Texas • Mobile, Tennessee

10 reasons why you'll enjoy flying in the Convair-240

1. 46 Passengers—at 300 M.P.H.!
2. Auxiliary jet exhaust thrust—for added speed!
3. You'll fly in a quiet, air-conditioned cabin!
4. "Air Brake" for smoother landings!
5. You'll enjoy "Sea Level" comfort at high altitude!
6. Horned wings prevent icing!
7. Tricycle landing gear with dual tires!
8. Full-redundancy cockpit—for added safety!
9. New safety-type wing!
10. You'll relax in easy-chair comfort!

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Aviation News
McGraw-Hill Publishing Co., Inc.

July 22, 1949

Grounding Constellations Disrupts All International Air Services

Early indications that TWA and PAA firms not due to cause, test underway with fuel injection systems no indication that giant transports will be flown until after CAA hearing.

By WILLIAM KROGER

Through what seemed to be an unfortunate series of circumstances, rather than a design fault in the aircraft involved, U.S. air transport was crippled last week and the future of two of the biggest companies in aviation deep in shadow.

An accident occurring at Honolulu, Pa., to one of Lockheed Aircraft Corp.'s Constellations, the newest, biggest and fastest U.S. airplane, came shortly after another "Constellation" crashed at Williamson, Conn. TWA grounded all Constellations, Pan Am, operator of the plane at Honolulu, as well as Pan American World Airways, involved in the Williamson accident, and American Overseas Airlines were affected.

FAAIC, Inc. Then—Across the Atlantic, the effect was felt by British Express Agency掌管的international air express division to panama on Pan Am routes, and hundreds of passengers temporarily were stranded.

When the suspension order would be lifted, permitting the Constellations to fly again, was doubtful late last week. Date for a CAA hearing on the Honolulu accident had not been set; presumably the suspension

order would continue until after the hearing.

PAA.—One distinct benefit is in the ceiling: when the Constellations are powered to operate most, if not all, will have the engines equipped with diesel fuel injection systems. Lockheed had a test plane in the air last week with this conversion. The system, developed by Curtiss-Wright, maker of the Model 338 engines powering the "Constellations," has been given a temporary CAA certificate which will be made permanent when 100 hours have been flown. Also, Lockheed was ranking diesel fuel injection conversions high to Constellation users.

But while out of the grounding will come a long-desired improvement in the fuel system: some of the three accidents which directly justified the suspension order could be laid to malfunctions of the fuel system.

The chronology is this: last Fall, a Constellation operated by Pan Am for the Air Transport Command straight in to Tepapa, East Sumatra, a Pan Am-operated "Constellation" in commercial service caught fire over Connecticut, but was landed at Williamson without injury to passengers or crew. Week before last, came the Reading accident when a Constellation with TWA personnel on a training flight crashed.

TWA.—The October St. Louis and Williamson accidents are at



TEST-TUBE MITCHELL

A March American Mitchell bomber, designated B-25J-25NC, being used at Wright Field in experiments with a variety of radar devices. Test installations are shown at the wing end and under the nose. (Martin & Kellman photo)

tolated to a break in the shaft through which power was transmitted from the engine to the cabin pressurization system. Either the fractured shaft, or some other part, clipped the hydraulic fuel line, spraying the liquid under pressure onto the red-hot shaft.

Although no official cause can be given for the Boeing accident pending outcome of the hearing, unconfirmed sources point this version: A fire started in the passenger cabin of the plane, ignited with smoke. All of the crew were up deck. One went back for some reason and left a door open and the pilot compartment then became so overheated the pilot was unable even to see the instruments. Because he could get a window open, the plane had lost its much altitude and made a crash of the craft unavoidable.

pointing toward these salient facts are a host of experts, charlatans, gurus and opinionists. Chief of these have been most strenuous to the Constellations (Dwight L. Behnke, president of the Air Line Pilots Association, among others) that "it defines us hazard" exists in Constellations, and called for a Congressional investigation.) Actually, according to Lockheed, there have been two induction systems, created by Lockheed, and both have been under contract.

b Testing. Both Lockheed and TWA executives are acknowledging as a result of tests, deliberately shortening induction lines, and then re-examining them. Only apparent result is that induction lines can be shortened and can be extricated simply.

One possibility advanced for the cause of the Boeing fire is in the electrical system. Leading point to this theory was the fact that last week both Lockheed and TWA were investigating the electrical systems of the big planes. While CAA has given permission for "Constellations" to be flown back to the home base, TWA is not moving their own completing the electrical system study.

Overall opinion of many in the industry is that Lockheed and TWA were the principal two victims of a series of all-metal large-jet airplane problems. Unlike other large-jet transports now in operation, the Constellations in a sense it being "pioneered" in the range of commercial operation. It is the biggest, newest, and fastest plane in use. It has "tears" and operational quirks all its own.



WILSON HONORED:

Maj. Gen. Arthur R. Wilson, TWA vice-president and former top-ranking Army officer in Europe, was represented by British Ambassador Lord Jowett when following presentation to Wilson of the Order of Honor Companion of the Military Division of the Most Honorable Order of the Bath. Wilson was cited for his work as commanding general, continental air transport, Communications zone, in the European Theater of Operations.

Lockheed's Answer. It will take some time for all of these to become apparent and be corroborated.

Meanwhile, the demand for air transportation is so great and the flying equipment is so limited that the "Constellations" had to be put to service because of their newness, because they are effectively speedsters, and—perhaps primarily—because intercontinental air travel is growing so fast, a segment involving a Constellation draws disproportionate attention.

Lockheed's answer is a string of figures from the record: 168,799,000 passenger miles flown without injury to any occupant (until the Boeing accident); three and one-half years of flying experience without accidents, and by the Army at Wright Field through which the "Constellations" came with battle-tested performance ratings.

With the exception of the switch to direct fuel injection, implemented for some time (the first of the new "Constellations" to fly will be off of the line this Fall), Lockheed plane to make changes in the aircraft's Pratt and Whitney R-3350 engines have been optional equipment all along; some purchasers have ordered this modification and these ships will be flying soon hereafter.

Twin Engine 'Copter Developed by Kelllett

Commercial version of military model powered by two Continental 350 HP engines will cruise at 90 mph, carry 12 passengers.

The first twin-engined commercial helicopter is in process of development from Kelllett Aviation Corp.'s twin-engine military helicopter, the KH-18.

As a commercial vehicle, the projected Model KH-2 will either carry 10 passengers or a cargo load of one ton or more, besides a crew of two, and can operate from a field the size of a baseball diamond, said President W. Wallace Kelllett.

Flight testing is due soon on the array helicopter, now being completed. Following these tests, Kelllett will build the commercial version from flight test experience and customer requirements. The company now has a full scale mock-up of the commercial version available for inspection at the plant at North Wales, Penna.

• T-18 History. Powered with two 350-hp Continental engines mounted in nacelles at the sides of the fuselage, the KH-2 is designed for a 90 mph cruising speed, top speed of 110 mph, and zero landing speed. Absolute ceiling is expected to be over 15,000 ft, and the machine is to have cruising range with fuel reserve, of 160 miles, when carrying 1,000 lbs. payload and 125 gallons of fuel.

The fuselage resembles that of a conventional transport plane and is equipped with tricycle gear and triple tailfin. The system of two rotors, with synchronized intermeshing "egg-beater" blades, which has been used successfully previously on the smaller Kelllett KH-1 Army two-place helicopter and also on the German Flettner helicopters, will be used on the KH-2 and on the KH-3.

Principal advantage of the KH-2 over other helicopters previously announced is seen in the added reliability of its two engines. Power transmission is designed so that it can operate with either engine in emergency.

• All-Metal Construction. The all-metal aircraft is to have styling comparable to the most modern fixed-wing transports, and is expected to have excellent stability and lack of vibration.

The first KH-2 will be

offered to transport operators providing air transport between military or residence areas and military command centers, service depots, parts. Additional shuttle and short-haul operations are being developed through conferences with individual users. Initial operating costs studies indicate that passengers will pay rates in the range of transit fares for the same distances.

President Kelllett and the company expect to concentrate for several years in development of multi-engine transport-type helicopters, and hope to announce commercial sales for a "moderate initial quantity" of the commercial helicopters following the flight tests of the military design. The price of the KH-2, not yet fixed, will be comparable to present-day prices for conventional twin-engine high performance airplanes of similar all-metal construction. (See photo.)

Conferences Cancelled

The National Aerospace Association has cancelled both its Airport Users Conference and Air Youth Conference, originally scheduled for this week and next in Milwaukee, Wis. inability to obtain complete panels of speakers because of vacancies is given as the reason.

AERIATION CALENDAR

July 10-11—National Aeronautic Association Annual Meeting, at the Hotel Statler-Wilson's Inn at Atlantic City, N.J.

July 11-12—National Aerospace Week Observance, at the Hotel Statler, New York City.

Aug. 1-2—National Aerospace Week Observance, at the Hotel Statler, New York City.

Aug. 10-11—AIAA Joint Private Flying Conference, at the Hotel Statler, New York City.

Aug. 15-16—National Flying Safety Seminar, at the Hotel Statler, New York City.

Aug. 15-16—National Aerospace Week Observance, at the Hotel Statler, New York City.

Aug. 15-16—Private Flying Safety Seminar, at the Hotel Statler, New York City.

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Stoll New Manager Of Bendix Products

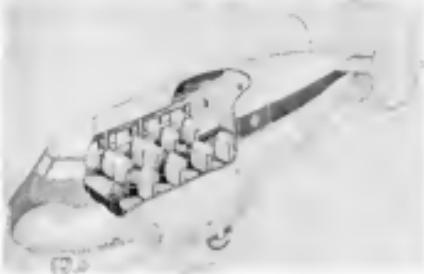
Montgomery gets top sales post; West manager at Boeing vice-president.

George E. Stoll has been appointed general manager of the Bendix Products division of the Bendix Aviation Corp. He has been with Bendix since 1945. J. M. Grahn will be Stoll's assistant.

Charles D. Mackart has been



named sales manager in charge of all aircraft products sales of the division and I. F. Richardson is his new assistant. Mackart, a former



Passenger or Cargo Two-cabin stretch of the projected Kelllett KH-2 commercial helicopter reported with single-engine performance, able to seat 12 passengers in a cargo version. The KH-2 will be a development of the all-metal military transport helicopter, XR-18, being completed under an AF contract and now to be flight tested.



army pilot, has been with Bendix since 1933. Open appointment.

♦ **Boring Aircraft Corp.** H. O. West has resigned as executive vice-president. H. F. Brown, formerly works manager of the Wichita division, succeeds him.

♦ **Rossell**—Thomas R. Rossell, former counselor of the embassy in Bogota, Colombia, has resigned from the State Department to become a vice-president of Boring.

♦ **Aeromarine**—F. D. Miller has been named to succeed J. M. Woods as director of cargo sales with Joseph Boyd, formerly general cargo manager, as his successor.

♦ **National**—O. M. Peacock has been appointed manager of the new air cargo division. He was formerly manager of tanks and schedules.

♦ **Wiggins**—Edward S. Wiggins, former Navy commander, is now assistant to the president. He was formerly a vice member of the Boston Stock Exchange and a partner in Ryan Whitney & Co.

♦ **TACA**—A. H. Gray, formerly of Trans-Caribbean Airlines, is now assistant and alternate passenger representative in New York. Louis Dorn will continue with the State Department, at Washington public relations director.

♦ **Chicago & Southern**—D. G. Richardson has been named assistant to the executive vice-president and will be in charge of developing New Orleans-Caribbean routes recently awarded. C&S by CAB.

♦ **Air Corps Transport**—Herbert A. Walker, a division executive of the AT&T Corp. for 28 years, has been named superintendent.

♦ **Parasite Airlines**—Gustav J. Raill has been named special representative in the Scandinavian countries with headquarters in Stockholm.

♦ **Feeder Airline Association**—Doris Miller has been named assistant to vice-president Joseph M. McElroy. She was formerly with the CAB and American Airlines.

♦ **Pioneer Airlines**—Robert L. Seward, former lieutenant-colonel in the AAC, has been named superintendent of maintenance.

♦ **Hyatt Tagatz Lines**—Allen Chase, president of Standard Aircraft, Inc., of Los Angeles, the Makita-Lao Corp., Honolulu, and the Commercial Export and Import Co., Mexico; D. F. Jones; E. Deacon, president of the Great Western Mutual Company of Los Angeles; Dennis Ahern, vice-president of the Market Basket, supermarket chain in Southern California; and T. J. Sullivan, president of Finance Syndicate, Chicago, have been named to the board of directors of National Skyway Flight Corp.

Half Propeller Failed, Hughes Tells Doctor

Critically injured, in the crash of his new XF-11 Army photographic plane, Howard Hughes, multi-million-dollar pilot and aircraft builder last week told his physician, Dr. Verne B. Mason, "I believe he believed the four-bladed rear half of his right propeller had reversed pitch and caused the accident." (See AVIATION NEWS decision last week Hughes was reported gaining strength but not out of danger.)

Cause of Army Misfortune Is Undetermined

A clean bill of health was given to both the Douglas-built XF-11 Misfortune and its test Allis V-1710 engine in the report of the Army's board investigating the accident last December which destroyed the radically-designed aircraft.

While stating that the cause of the accident could not be determined definitely, the board expressed the opinion that the possibility of fuel surges could not be discounted.

On a routine flight over Washington, the XF-11's engines cut out and the plane's occupants parachuted to safety. The Misfortune had flown to Washington from Los Angeles, establishing a new nonstop record of five hours, 17 minutes at several hundred miles per hour.

The report looked out the windows of the cabin, thinking that some part must fail at a section of the wing, tail or landing gear door might have torn loose and caused it to a brace-like position, but could not



GLOBEMASTER INTERIOR

The 70 ft by 126 ft cargo hold of the Douglas C-74 Globemaster II carries a load of 45,000 lbs, has a range greater than 3,000 miles and a top speed of 275 mph. The plane has three loading elevators to permit loading from ground level, each capable of carrying a 15,000-lb. unit.

Research Problem Put to House As Senate Passes Kilgore Bill

Patent rights are big issue of industry opposition; plan calls for Presidential appointed board and \$15,000 a year administration.

The aircraft industry last week won its battle with the House for an amendment to the conduct of the aerospace research and development contracts which take as far as patent rights are concerned.

The Senate has put the issue up to the House by passing the National Science Foundation bill which, as effect, reverses the long-standing conflict between the Army and Navy and the industry of financing inventions arising from research contracts.

Reversing from two opposite positions originally proposed a year ago by Sen. George M. Smathers (D-Wash.) and Sen. Harry S. Truman (D-Wash.), the bill as passed would take a foundation to be administered by a 15-member Adm. Admin. appointed by the President after recommendations by a National Science Board, also appointed by the President.

♦ **Plan**—Steve Brookins — The Foundation would comprise seven divisions, including one for national defense, one for engineering and technology, one for scientific personnel and education, and one for publications and information. Other divisions would be concerned with mathematics and physical sciences, biological sciences and health and medical sciences.

The Foundation would not do research, but would coordinate government efforts and administer work under grants by private research firms and educational institutions.

Friendly in accord with the principles and objectives of the bill, the industry takes a gloomy view of Section 6 which—in an attempt to further the aim of making the findings "fully and freely available to the public"—lays down strict regulations regarding publication of inventions made on Federally-funded research or development.

♦ **Proposed Research**—E. Prather, president of the Society which holds numerous freely available to the public and, if patented, by freely donated to the public within certain limits. One of these is that the head of the Government contracting agency may arrange for the contractor to retain patent rights if (1) he

makes a finding that the agency has made every reasonable effort to arrange for the conduct of the necessary research "without entering into a contract" giving patent rights to the contractor, (2) the contractor makes, or has made, substantial contribution to the development with his own funds or (3) the Government is given an irrevocable, non-exclusive, royalty-free license to use the invention.

The industry's objection to the patent provisions of the bill are based on the theory that patents, and royalties arising from them, are unnecessary to research. There is agreed with the view that when the Government finances all research, invention stemming therefrom should be Government-owned. But when private funds have participated in the development, the industry believes that incentive will be destroyed by making the resultant inventions public property.

♦ **Plan As Opposition**—On this basis, the Aircraft Industries Association, as well as the Navy Industrial League, opposed the patent provisions of the Kilgore bill, supporting instead an amendment introduced

Boeing Uses Turbo

The Boeing Stratocruiser will be the world's first commercial airplane to use the two-stage, two-spool General Electric engine horsepower. The aircraft will be able to cruise at a rate of 300 mph at 30,000 ft, 250 mph at 25,000 ft, 200 mph at 20,000 ft and 150 mph at 15,000 ft.

The aircraft will be built in the Boeing B-47 and later in the Boeing B-52. It operates from the form of otherwise world exhaust gas.

In addition to supercharging the two GE Pratt & Whitney Wasp Major engines, the aircraft will also include a power plant for cabin altitude-controlling purposes. The modified installation is smaller and lighter in weight than the conventional mechanical bypass. It is designed to ensure constant pressure of compressed air regardless of altitude and is intended during takeoff.



MEDAL TO VON KARMAN: General Carl A. Spaatz, AFM commanding general, presents the Medal for Merit on Dr. Theodore von Karman, director of the Guggenheim Astronautical Laboratory at Caltech, for contributions to extramural research during the war. (UPI photo)

to Sen. Alexander Smith (D-N.J.) which would require merely that each contract let by the Foundation contain provision for the disposal of inventions so as to protect both the public and the manufacturer.

AIA pointed out that the War and Navy Departments have objected to the patent provisions on the ground that they would restrict both the public and the manufacturer.

AIA pointed out that the War and Navy Departments have objected to the patent provisions on the ground that they would restrict both the public and the manufacturer.

A House committee spokesman said last week that no action had been decided on the Senate bill. Not far off, however, was the reported intent of the House to reinsert the Kilgore bill to the AIU committee. If the committee should report out the Kilgore bill, the congressional joint committee which would have been created by a Senate-House conference committee unless the susceptible parts of the Kilgore bill were inserted during the House debate.

**WE ARE RAISING
THE PRICE OF THE -Seabee**

Effective July 15, 1948, the list price of the standard Republic Seabee becomes \$4495. The original figure announced late in '48, was based on .

round trip flights of one hour and material expenses. Since V-E Day, mounting

costs of every part... increases in the plane itself... and the voluntary

raise in wages by Republic to meet increased living needs, are the sole

reasons for the new price. The four-place Seabee amphibian is of all metal

construction, including wing and control surfaces. It is built by the makers of

the mighty Thunderbolt, in standards of ruggedness and performance which

would put them up even if it were not for Republic's simplified methods of

design and manufacture. Of prime importance to the user, we have

refused to compromise with standards of material or workmanship.

Hence, despite the modest increase, this versatile airplane is without question

the unparallelled buy which is emblematic of the outstanding value for 1948-49.

Republic Aviation Corporation, Farmingdale, Long Island, New York.



PRIVATE FLYING

New Sensenich Controllable Propeller Built for Lightplanes

Two-position blade shifted by cockpit control flight-tested on Piper L-4 model; CAA approves two hub sizes

By ALEXANDER McNEILLY

First details released describing the new hydraulic controllable lightplane propeller developed by Sensenich Brothers, of Lancaster, Penna., disclose that the manufacturer has already obtained CAA approval on two different hub-sizes, has made numerous test flights with it on lightplanes, and has amassed considerable flight experience with it on the Piper XL-14 experimental Army liaison plane.

Basically, the new Sensenich Skyblade is a two-position model which "shifts gears" from high to low pitch and back again, at the will of the pilot, by operation of a simple cockpit control. The two blades are held in high pitch position by the twisting force of centrifugal action upon two counterweights which are attached to the blade shanks.

To shift to low pitch, the pilot's cockpit control opens a two-position air control valve on the engine, which permits oil to flow from the main oil pressure system into a cylinder in the body, pushing the cylinder forward. Movement of the cylinder is transmitted to an arm which actuates two levers which actually pull the blades around from high to low pitch.

Flight Necessary. The two-position propeller has already been flown successfully but experimentally, with a new constant speed governor attachment, which in effect makes the two-position propeller a constant-speed propeller. The governor, built by another manufacturer, is still in experimental status and has not yet been approved.

In addition to the newer Culver Coder used by Sensenich on a flight test plane for the Skyblade, it has been flown extensively on the post-war Culver Model V two-place plane and is being specified as standard factory-installed equipment on that plane. The Culver

Model V installation uses a hub which has CAA approved for 80 hp at 2800 rpm continuously, with 3800 rpm permissible at takeoff. A larger hub already has CAA approved for 150 hp at 2800 rpm continuously, with 165 hp at 2800 rpm permissible at takeoff. This second hub is similar to the one used on the Piper XL-14 liaison plane, and approved by the AAF for use in June 1948.

The propeller is designed for use with engines equipped with fly-by-wire controls. It also requires that the engine be provided with an oil pump connecting the engine lubricating oil pressure source with



Key Prop. Installation of the new Sensenich Brothers two-position hydraulic propeller, on the Culver Model V two-place personal plane, shows laminated horn blades with titanium metal tips and metal leading edge strips, counterweights on blade shanks. Model shown has CAA approval for 84 hp at 2800 rpm continuous, with 3800 rpm for takeoff.

the front end of the hollow propeller shaft.

Anticipate Use. — The manufacturer anticipates that the Skyblade will be specified as alternate equipment at extra cost on many of the newer model planes coming on the market. Interest in test flying the new model has already been expressed by many companies, among them Piper, Stearman, Taylorcraft, Cessna, Commonwealth, and Globe Benét and Johnson Fokker.

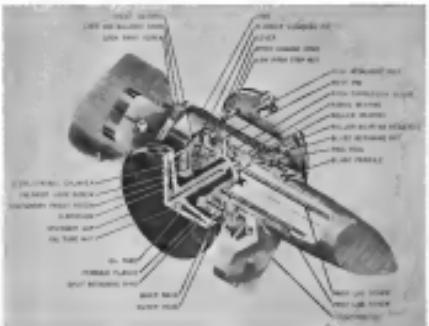
Present indications are that the company can sell all it can produce in the immediate future for planes using the newer model engines already equipped to use it. Eventually it is likely that the engine manufacturers may modify some of the older type engines for this type shaft and the oil passage from the engine oil system to the propeller.

The hub itself uses a hollow after steel former for the body, with a steel and magnesium hubcase containing phenolic bushings which serve as bearings for the pitch control cylinder. Inside the pitch control cylinder is a phenolic stationary piston fastened to the oil tube. A neoprene diaphragm serves as its expanding seat between the outlet assembly and the front cylinder and cap.

Construction Detailed. The pitch change actuating rod is threaded onto the pitch control cylinder, and passes with it. Two steel pins on each side of the hub body serve as fulcrums for the lever arms which link the pitch change actuating rods to the pitch adjustment blades and the pins to each female flange. Cylinder lock screws engage opposite slots in the pitch control cylinder to prevent rotation while the cylinder is operating.

The blades are balsa or maple wood laminations, bonded with either a phenolic resin glaze or a thermosetting resin glaze which produces a vertical grain finish. Bonded blades are attached by screws to the wood blade shanks. Outer 18 inches of the blade is covered either with draped fabric, or a plastic sheeting glued to the wood. Stainless steel cap tips and metal leading edge strips are attached to tip and leading edge with screws and countersunk nuts. The blades are coated with a special propeller varnish, as protection against moisture penetration.

Built by a conservative company which has more of its hand-painted propellers in flight than any other manufacturer, the new two-position



Sennrich Prop Cessna: Cutaway drawing of new Sennrich Brothers two-position hydraulic propeller hub shows retaining mechanism, assembly of ports, method of attachment to flange-type coupling.

Sennrich model is a strong indication of the growing trend toward variable pitch propellers for all but the minimum-size personal planes, noted in *Aviation News* July 13. The company makes no announcement of claims of performance for its new product, beyond a statement that a considerable increase in fuel economy is obtained at cruising level flight at 4,000 ft. or more.



83 AN HOUR PLUS DUES!

Members of the Trade United Flyers Club, Inc., Tonawanda, N. Y., are shown before delivery on their new Aerocar Champion at Niagara Falls airport, from Billy Drivitz (left) of Niagara Falls Aerocar Corp. The 15 club-members all employes of Laclede Air Products Co. pay \$3 a month dues in the club, and \$3 an hour for flying time, agreeing to pay for a minimum of 3 hrs. flight time a month.

An average of three flights per week are in operation and many additional planes are enroute. Explanation lies in the fact that there is available more smooth river surface for landings and takeoffs than level land surface.

Fairchild Leases Site For New Plane Center

Brether Field, Kansas, is known plan and development facilities for personal planes.

Fairchild Engine and Airplane Corp has leased buildings and installations at the former army pilot training center at Brether Field, Kansas, for a new personal plane manufacturing and development center.

While details of the new planes to be produced here have not been disclosed it is known that the company has under development a fast-paced all-metal low-wing monoplane, tentatively designated as the Model F-1, which will be powered by a Continental 165 hp. engine, and is expected to cruise at speeds exceeding 190 mph.

New at Dallas—Currently Fairchild's Personal Plane Division is located at Dallas where Texas Engineering and Manufacturing Co. is producing Fairchild's pre-war high-wing four-place plane, the P-24, under sub-contract to be marketed by Fairchild distribution. The move of the division to Brether Field indicates that Fairchild is returning to active manufacture of personal planes after the cessation of such activities in the war to make planes and the C-45 twin-engine cargo planes and engines.

J. Clinton Ward, Fairchild president, said last week that the new location on a 1,900 acre flying field with three 6,000 ft. runways affords excellent facilities both for development and manufacture of personal planes. He said the company would continue its extensive research and development program for personal planes under supervision of Sherman M. Fairchild, chairman of the board.

McKey in Charge—Harry M. McKey, general manager of the Personal Plane Division, will supervise production at the Brether Field plant. He has been with Fairchild since 1945. Formerly vice-president of St. Louis Aircraft Corp. and recently succeeded Lee Smith as manager of the division. Harvey

Gross is director of sales and service for the division.

Fairchild has signed an eight-year lease with Wichita and Arkansas City, Kan., the two municipalities which hold title to Brether Field under its release by the Army, and which will operate it jointly as a commercial airport.

Besides the main manufacturing activity at the new center, the new plant will include a large service base and space for storage center for Fairchild-powered-type aircraft including the P-38 and PT-19 low-wing trainer, now being used widely as a personal plane.

Anti-Noise Campaign Is Making Progress

Studies by CAA cut prep head on existing ATA cabin problems of transports.

Commission of CAA Administrator T. P. Wright, has as assistant John H. Gleim, for reduction of noise created by airplanes last week was presented terrible results including:

PA report has a technical committee of the Aircraft Industry Association dealing the problem principally for large aircraft, which identified cause most of the racket.

PA report at Main Field, Augusta, Ga., CAA base, on the elliptical propagation of marginal array transonic types which are nearly pressurized aircraft.

Continuation of flightplane noise abatement studies by the National Advisory Committee for Aeronautics.

Administrator Wright appointed the greatest airplanes and quietest operational procedures, pointing out that aviation is during a severe headache in locating new airports, because of the public antagonism to airplane noise.

A report prepared by a committee of aircraft industry engineers headed by A. E. Raymond, vice-president of Douglas Aircraft Company, however, is the Administrator's appeal analyzed the problem of aircraft noise reduction thus:

- Changes in propeller blade form, size, etc., can vary propeller sound output through a range of 30 decibels and is worth investigating.
- Use of heat sinks in connection with cooling exhaust provides a reduction of noise levels in the order of 10 decibels without considerable reduction in jet thrust.
- Compounding turbo-jet engines

New Roadable Plane

Consolidated-Vultee Aircraft Corp disclosed last week it is testing a new experimental roadable monoplane with retractable landing gear, built at Decatur, Ga. The new plane, designed by T. P. Hall, who is in charge of its development, Hall previously had designed one roadable plane for Convair which was used in 1946, but was abandoned when taken over by Vultee Aircraft Dallas, for additional development. Convair News Feb. 4, 11, and 28, 1947.

The second roadable plane has structural fuselage with three sections, including a rear section like a personnel plane.

Indeed, but the nose is in higher frequency and is certainly best for a shorter base of one point on the ground.

The report indicated that the same problem was generated in proportion as power of engines went up, and that solution of the problem was regarded as highly important both from the standpoint of safety of the aircraft and from the standpoint of people on the ground.

"We have reached the point of no return for conventional road-passing," (at radius of transport plane) the report read.

Grove reported that studies were going on at Bush Field, with propellers for the objectionably noisy military trainer type planes. Investigation includes use of clipped tip propellers. Preliminary results indicate blades of apparently similar diameter, with resultant lower tip speeds, can be used with only a negligible loss of the power developed.

For helicopters, NACA has already indicated that the multi-bladed propeller or forming at slow



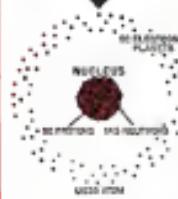
PROPOSED FLIGHT PLANNER:

CAA has asked personal aircraft manufacturers to study possibilities of an experimental indicator, shown above, which will supply a pilot with data-in-use information about his plane's performance on varying conditions of altitude, temperature and gross weight. A clamp attaches the indicator to the instrument panel to be removable for use out of the aircraft when not in use. To operate, the pilot turns a knob on the bottom until the proper setting for gross weight, altitude and temperature appears. The other figures then show exactly what he can do with his aircraft. The indicator may be especially useful for pilots in hill and mountain country who frequently fly at varying altitudes and temperatures. Performance data would be calculated and needed automatically for each plane type of manufacturer's use in favor of its use in personal planes.

This Fateful Atom...

1 ORE TO U235

Only 0.7% of natural uranium is U235.



2 CHAIN REACTION



FOR many years nuclear scientists in the birth of the Atomic Age, we begin to see the tragic impact of the atomic bomb that shocked the world down at Hiroshima, N. M., on July 16, 1945. These men first shattered stones in an explosive fission reaction. Then came Hiroshima and Nagasaki.

In every case the fission bomb was either uranium 235 (U235), or plutonium derived from the fission of U235. Every pound of U235 stores eight times more energy than coal, yielding also one to three thousand times plus energy. Thus these fissionable materials supply both their own fuel and a highly sensitive lot of high-explosive trigger—a perfect setup for a chain reaction (Fig. 2).

Chain reactions are like chain letters. Starting from one radioactive atom and ending with each. But these atoms are not open spaces; a chain starts as a small block of U235 or plutonium gradually eats its way through the material until it leaves most of the released energy escape from the block.

The larger the block, the smaller will be the percentage of missing neutrons, and the more left to裂 off after each. When the block is rapidly built up beyond a certain point—the so-called "critical mass"—the neutrons multiply exponentially, and the block disappears with explosive speed and violence—as in a bomb (Fig. 3).

This bomb explosion is a fission bomb. For economy and ease of control, neutron piles for the gradual release of nuclear energy for commercial purposes will normally use a low-fuel—fuel as U235 or plutonium diluted with U238, thorium or other less costly materials.

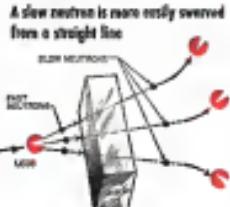
To increase the chain reaction such piles must be large and artificially stimulated by using a slow source or some other moderator (Fig. 4). This is called a reactor. Slow neutrons make more fission fast reactions because there is more time for them to be scattered from a straight path by the scattering of nearby nuclei, as shown below.

3 WHY BOMB EXPLODES

What kind of rapidly assembled U235 passes secret critical size? It explodes spontaneously.



4 SLOW NEUTRONS MAKE MORE HITS



FOR FATEFUL Year 12 of the Atomic Age, Plutonium has become a major source of heat energy for power generation, central heating or industrial processing. Present applications of nuclear energy will use either U235 or plutonium as "fuel," mixed with carbon or some other moderator to slow down the neutrons and thus keep the chain reaction going.

The splitting agent may be either U238 or thorium, or both. There will be double duty, because neutron fission converts U238 into the energy-releasing plutonium, and thorium into U233, which may prove equally valuable.

The most probable piles of the future will "burn" U238 to make other atomic fuels, plutonium and possibly U233, which in turn will deliver heat energy to the pile. In this way it will be possible to get four the pile for twice heat than the equivalent of 1000 tons of coal for each pound of U235 split. This highly attractive prospect will speed the day when nuclear energy can compete with coal.

While already moderately complete, the piles making plutonium for bombs at Hanford, Wash. (Fig. 5) used the basic principle on which reactors for power and heat will operate. The heat source and all associated equipment will be put in a shell. The plutonium will be passed to the pile (or left in) as supplementary fuel.

ATOMIC POWER

The possible everyday applications of nuclear heat power in Fig. 2 have been recognized from the very first day of the Atomic Age. Year 2 will see the building of the world's first atomic power plant (a plutonium) at Oak Ridge, Tenn. This will be followed by installations with plutonium power, but it may be years or decades before they prove economical. To compete with conventional plants the piles must first be redesigned so as to temperature high enough for good power plant efficiency. Also the techniques of operating piles by remote control through the heavy radiation screen must be thoroughly understood.

The Hanford piles run on natural uranium containing only 0.7% of U235. The typical commercial reactors contain more than 40% of U235 in plutonium, but less than 50%. This will avoid both the low efficiency of the sodium reactors and the excessive radiation of the rich reactors. It will permit piles of moderate size and take maximum advantage of U238 and thorium as potential sources of plutonium and U233.

One should not expect U235 to replace coal power in this generation, although a few central power stations and ships will

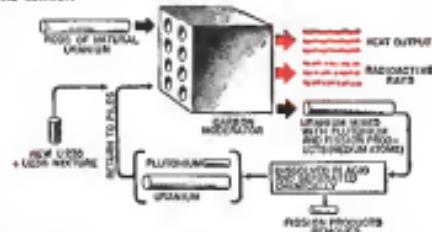
...can Serve Man...

ARMAMENT HOPES

More important, however, than the heat and power applications of nuclear energy are the results of the reduction of hydrogen bombs operating on reactor. Because these materials act chemically like steel, ordinary non-nuclear bombs, but can be followed and directed, they are expected to play tremendously vital parts in medicine and biology. For more details, see the last page of this section.

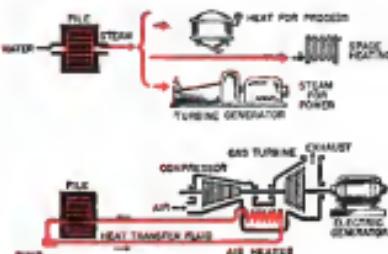
1 SLOW-NEUTRON PILE

Can make plutonium for bombs—or heat for power, process and comfort



2 PRACTICAL APPLICATIONS

Include steam for turbines, process and comfort heating—also heat for gas turbines



...and the Great Debate unfolds

A **YEAR** has probably been marked by the debate on a single subject than any other positive measure in the world's history. Social, economic and political as well as purely technical issues have been pressing for realistic solution. Let us look at these issues and see where we stand:



SECRET VS. FREE SCIENCE

Throughout the first year of the Atomic Age, our forces have tried almost "keep the secret of the bomb." To prevent potential enemies from seeking atomic bombs we have urged a complete Marshall Plan.



CIVILIAN VS. MILITARY

Because the atomic bombs the world's greatest weapon, the armed forces would like to control it. But because atomic energy can also be used for peaceful purposes, we must find a way to accommodate both points of view. These conflicting viewpoints had their strong proponents before the Congress which finally reached a fairly satisfactory compromise in the Atomic Energy Act of 1946, setting up a semi-public civil board with which the armed forces will have continuing liaison. As we go to press, just before Year 2 of the Atomic Age begins, this bill has passed the Senate, but there is still a question how rapidly it will be passed into law.



PRIVATE VS. PUBLIC

Atomic energy is "too big" and "too hot" to be handled privately. It must be understood and internationalized. The questions are how and in what areas. Fortunately, in the "bombs" in these pages show, there are means that may attain reasonable safety against misuse of the atom, and still do so without public control of many "non-dangerous" applications.

DOMESTIC CONTROL AS PLANNED IN THE ATOMIC ENERGY BILL OF 1946

McMahon Committee Bill contains the following provisions:

Policy. Directs that the policy of the U. S. is develop and utilize atomic energy to insure the public welfare, increase living standards, strengthen competitive enterprise and promote world peace.

Organization. Establishes the Atomic Energy Commission (AEC) of five ad ministers to direct four divisions on research, production, regulation and military applications; to work in close with three committees from (1) the armed forces, (2) commercial civilians, and (3) joint Congressional representatives.

Patents and Inventories. No private patent protection for production of fissile materials or their utilization for military weapons, but AEC will partly compensate for such inventions, when made by private citizens. Patents for non-military applications may be produced or administered by the AEC only when public interest is affected.

Military Applications. AEC to manage all development work and produce atomic bombs as directed by the President, to be delivered only on basis of the "not plus unneeded" funds of the National Defense Budget.

use of all phases of atomic energy — even of the most fundamental of nuclear physics. Others have sought inventories and complex disclosure of all basic "secrets" both scientific and technological. These have held that such information can be effectively hidden, that secrecy blocks progress and breeds waste.

A year of debate has brought the great mass of valid opinion to this middle ground [1]. Both recognize the importance of basic physical knowledge [2]. Some favor the "secret" benefits unique of the device, and methods developed for the device, to be protected [3]. Both fight to specialize information on atomic bombs and basic industrial products until international exchanges are fully open.

while Time runs out



NATIONAL VS. INTERNATIONAL

Born of nationalism, the Atomic Age began when three nations discovered a weapon that today gives them the greatest military power on earth. The primal question is: Shall the atom remain the sole triplets in this Atomic Year 2: the dangers of nationalism, the dangers of internationalism, the captive dangers of not being able to settle the question in time to make the atomic bombs threat-

ment of its complete, nationalism?

During Year 1 of the Atomic Age, the Truman-Albeni-King Commission, the mainly unpaid of the State Department's scientific commissioners, and the U.S. representative on the United Nations Atomic Energy Commission, has all called for international control of atomic energy. Year 2 will start with no such control. This failure to decide and set in is part a natural result of the extreme difficulty of the problem and the obvious dangers of atomic bombs. Nations everywhere have a triple dilemma in this Atomic Year 2: the dangers of nationalism, the dangers of internationalism, the captive dangers of not being able to settle the question in time to make the atomic bombs threat-



Leading industrial nations in five years, especially scientists, announced after Hiroshima. Already 800 of the 1000 physicists in the U.S. are working on atomic bombs. Nowhere else in the world is there such a large number of nuclear scientists. It may be too late to check the growing accumulation of the atomic bombs.

INTERNATIONAL CONTROL AS PROPOSED BY THE U.S. TO U.N. ATOMIC COMMISSION

Extracts taken from following constructive path laid out by Atomic Scientists in "Armenian-American Report":

Principle Initiatives. U.S. here proposes that all nations band together to prohibit the use of atomic energy for war and to prevent and banish its development for the benefit of mankind. To this end an International Atomic Development Authority would be set up, and to it the U.S. would give over, at earliest stage of its organization, all atomic bombs, know-how, raw materials, facilities, and techniques of fissionable materials. Thus IADA eventually would supersede national authorities on atomic matters and supplement them as often.

Control and Operation. IADA would take over control of nuclear industries of all countries excepting U.S. management and control of all atomic energy matters that affect a possible threat to World security. These include:

1. Raw Materials—Supplies of uranium and thorium to be incorporated, controlled, and developed by IADA.

2. Production—IADA is created and operates plants producing fissile materials and to own and control their products.

3. Research—IADA to undertake research and development on all aspects of atomic energy and to possess exclusive right of research on atomic explosives.

Rationales. At the heart of the plan lies the problem of peace for civilization—a means for profound stability. To the U. S., one aspect of security appears crystal clear: There is no way when the vital right now held by the free states of America must be realized if it is not to be incompatible with the setting and purpose of the proposed control.

TIMEABLE—ATOM YEAR 1

1. July 24, 1946. World's first atomic bomb demonstrated in New Mexico.
2. July 26, 1946. President Truman and Prime Minister Churchill issue Potsdam ultimatum threatening Japan's destruction if she continues.
3. August 6, 1945. Atomic bomb dropped on Hiroshima.
4. August 9, 1945. Atomic bomb dropped on Nagasaki.
5. August 12, 1945. Army releases "Spartan" Report on "Atomic Energy for Military Purposes."
6. August 25, 1945. In peace negotiations terms of Potsdam declaration.
7. November 25, 1945. Truman-Atkinson (our delegation of scientists and professors looking toward international control of atomic energy by United Nations).
8. March 25, 1946. State Department issues "Armenian-American Report on the 'International Control of Atomic Energy'."
9. April 15, 1946. Manhattan Engineers District announces program for experimental development of atomic power.
10. June 1, 1946. "Atomic Energy Bill of 1946" passes Senate unanimously, is referred to House of Representatives.
11. June 16, 1946. First meeting of United Nations Atomic Energy Commission (Albeni, Storch as American members). Manhattan Engineers District announces availability of radioactive isotopes for medical uses.
12. July 1946. Joint Army-Navy test of atomic bombs at Bikini.

...but if Man Masters Atom...

IF METAL DISINTEGRATES by the atomic bomb can be avoided, the first century of the atomic age will bring many gains in scientific knowledge, health and living standards. Already many properties have been outlined, but those we can neither foresee nor suspect may be even more important.

The prediction is general in scientific experience; the most fundamental discoveries have always been the most fruitful. The study of molecules gives us chemistry. Faraday's experiments with electricity and magnetism are the foundation stones of the great electrical industry. Can we expect any less from an understanding of the heart of every atom?

RESOURCES

Atom-splitting plants should double today full world-wide in three stages: (1) heat and power applications of the uranium piles; (2) general industrial applications of equipment and methods originally developed for the bomb projects; (3) diverse, simplified and modified uses of the "fission atoms." Industrial isotopes now should be available from pile operations.

It is now evident that the energy field of the atom in its present pile can be multiplied many times by using the fission energy in the piles for plutonium and possibly the U-233 produced respectively from the U-235 and the thorium in the pile. This is an indirect way to "burn" inexpensive U-238 and thorium, and thus greatly extend the supply and reduce the cost of atomic fuels.

POWER APPLICATIONS

Although present piles run at low temperatures, it is certain that temperatures high enough to produce steam for electric steam and gas turbines will be attained. Already an experimental atomic power plant has been tested. Atomic power for remote remote installations (out for heating Arctic regions) may not be far off.

ATOM SPLITTING WILL SERVE MAN IN:



In five or ten years atomic piles will be driving a few experimental ships and perhaps a dozen or two ships in 20 or 25 years. They may begin to compete widely with coal as a fuel for centrally situated hydro, central heating and power plants. The 50 ton maximum weight of shielding rods set under power for a submarine and small piloted plane.

SPECIAL USES

Some day ultrahot temperatures from splitting atoms will be used for special industrial operations on metals and other materials. Even the dead muscle bomb which safely serve peaceful ends—blasting lakes in deserts, changing the course of rivers, clearing mountains.

INDUSTRIAL HYDROGEN

The special industrial equipment and methods developed for the bomb project will find hundreds of important uses—mostly for purposes unrelated to atomic energy. These developments include pumps with million cubic feet per leak, leak detectors of amazing sensitivity, ultrahot welding, a portable mass spectrometer for quick and accurate gas analysis, new ways of handling corrosive and poisonous materials, new diffusion barriers for the separation of gases and of processes producing plutonium.

THINNING ATOMS

Yet more important than any of these, in the long run, will be the hundreds of radioactive isotopes now available as by-products of pile operation. Chemically indistinguishable from the stable forms of the elements, these isotopes serve as tagged atoms or "spies" if mixed with known stable atoms of the same species. They can be used to detect and control the life cycle of any virus or bacterium, to identify as early as possible health Web these exciting fields of research, the scope of any element or compound may be traced through the bodies of men, animals and plants. Similarly, tagged atoms

may be used in studying the course of many kinds of industrial and chemical operations.

BIOLOGY AND MEDICINE

A suspected hyperthyroid condition can be diagnosed by finding the patient a minute measured amount of radioactive iodine. The click of a "Geiger" counter placed on the patient's neck will tell (1) what percentage of the available iodine concentrates in the thyroid cells and (2) how rapidly that concentration is accomplished—giving a definite indication of the state of the gland.

In similar fashion the radioactive isotopes of hydrogen, oxygen and carbon will trace out the intricate mechanisms of cell division and protein in the body. Radioactive iodine can be used to explore the heart. Radioactive iron will show how and where blood cells are formed. Radioactive sodium will tell the circulation of blood.

USE IN INDUSTRY

In classifying the radioactive isotopes will speed the understanding of metal bending and expand ramifications. In industry they will measure flow, detect leaks, and do other useful work.

Meanwhile the atomic piles will be manufacturing certain radioactive isotopes that can serve as cheap but effective substitutes for high-cost medical radium.

KNOWLEDGE COMES FIRST

It is already clear that the chief benefits of atomic splitting will come from an ever-increasing knowledge rather than as new engines and gadgets. But in the long run man's new understanding of the inner atom will enrich the whole range of human activity. This has always been the case with less fundamental discoveries in science. It can hardly be less with this most fundamental discovery.

PRODUCTION

Canadian Aircraft Industry Swings Into Post-War Production

A. V. Rose enters picture with Tudor II, jet-propelled fighters and conversion of Lancaster, British-U. S. capital equal.

Parted by the war to become an important producer of aircraft, Canada emerged from the war with missile aviation manufacturing facilities as much as any industry has been quick to expand. While no engines are yet being made in the Dominion, domestic aircraft designs are more numerous, and production is ahead of present day.

Strengthening the overall framework is the entry into Canada of A. V. Roe Ltd., one of Britain's major firms. In aircraft manufacturing, unlike in most other Canadian industries, British capital is equal to, if not greater than that from the U. S. In addition to Avro de Havilland, Percival and Hollis-Roper have Canadian operations. U. S. companies with subsidiaries in Canada are Fairchild, Pitme, Pratt & Whitney, and Curtiss-Wright.

Most aircraft production is em-

ployed in eastern Canada, with the bulk of it being done in the Montreal and Toronto areas. At Montreal, Canadian Car & Foundry Co. Ltd., is now producing Northrop Nighthawk V aircraft powered with Pratt & Whitney R-4360 sixes, for domestic use and export, primarily to the Latin American countries.

Canadian Car & Foundry also has produced a prototype of the Boulton CBY-3 "flying wing"参

paraglider-type transport but has not yet gone into production of this aircraft.

Canadair Ltd., Montreal, a government-owned company, is now building a Canadian version of the Douglas DC-4 for Trans-Canada Air Lines and for export. Aircraft will be powered with Radial-Seven Merlin engines and will be used in TCA domestic and international air transportation routes. Initial or-

der is understood to be for 36 aircraft. Company is also converting war surplus DC-3 aircraft for TCA.

Fairchild Aircraft Ltd., Montreal, has started production on a new Canadian-designed bush freighter, T-11 Shrike, a 7 to 8 passenger all-metal monoplane designed primarily for northern flying. Plans are expected to be in production late this autumn and are to be built with wheel, ski or pontoon landing gear, and powered with new or used Pratt & Whitney Wasp Major or T-115 engines.

Engines Products of Canada, Ltd., Mississauga, is building the first Canadian biplane, the Sirspeed & Goulet Mark VI. Prototype was scheduled to be ready during the summer. It is designed to carry two passengers and pilot plus 100 lbs of baggage.

In Ontario, the largest manufacturer is A. V. Roe, operating jointly with the Canadian government the former government-owned Victory Aircraft, Ltd., Toronto. Roe is tooling up to manufacture Tudor II transports for North American sale, is designing jet-propelled fighter for the Royal Canadian Air Force, is converting Lancaster aircraft for use by TCA as trans-Atlantic 39 passenger transports, and is negotiating three converted planes after 2,000 miles. Roe also has plans over Canadian government's Tudor contract and has a consultant for design and development.



MAINTENANCE AND SERVICING SIMPLIFIED IN SATURN:

One of the main selling points of Lockheed's new feeder plane is illustrated in these photos. One salient feature common to almost all maintenance and servicing on the Saturn is the fact that an open platform at a height above the ground level, has fold-down stairs

to expose the back of the instrument panel, inspection panels and access to engine nacels can be made without a ladder. The rearward-hinged fairings prevents loading of cargo without special equipment. The passenger door, only 34 inches above the ground level, has fold-in stairs



STRATOVISION PLANE

Cooling easily over a fixed course at 30,000 ft altitude, this Lockheed Towhee, issued to Westinghouse Electric Corp. by the Navy, is being used to flight test "Stratovision," Westinghouse plane for greatly extending line-of-sight coverage of television and FM radio stations. The plane picks up ground signals and relays them from a transmitter as the plane. The commercial television plane will be a Merlin 305, designed for 25,000 lbs gross weight.

of gas turbine and of jet engines.

De Havilland Aircraft of Canada, Toronto, branch of the British company, is manufacturing the Fox Missourian twin-engine biplane, powered with Gipsy Major engines, and a new elementary trainer for civilian and RCAF use, the all-metal Chipmunk. The company's newest plane, powered with Gipsy IC engine. Other aircraft for RCAF are under contract to be in design at this plant.

Private Aircraft (Canada) Ltd., has leased space at de Havilland Aircraft, Toronto, but has not yet started manufacture of the Pavia Pasticci. Many accessories, formerly imported, are now made in Canada.

Pay Load Factors Influence Design

Planes influencing the decision to make a two-seat passenger airplane, the first of the first group was *Beech* aircraft—these have been revealed in a study of engineering problems of small transport aircraft by Willis M. Howlett Jr., Lockheed's chief preliminary design engineer.

Most important is an evaluation of potential profits for airplanes carrying respectively five, 10 and 20 passengers. Surprisingly enough, the Howlett study shows that the five-passenger plane could never recover money, although it were to be used in the operation of a limited range of flights and had a constant factor of 80 percent direct operating costs was present.

Navy Aircraft, Ltd., Steven Creek, Ont., in cooperation with the field, has built the prototype of a four-passenger high-wing monoplane, the Norwidge, powered with 50 hp Continental engine. Aircrash is available with wheel, ski or pop-up landing gear.

Northwest Industries, Ltd., Edmonton, only western Canadian air-

craft manufacturer at present, is building Bellanca Skyrocket and Avro Arrow under license, for sale in Canada, Alaska and far export.

A number of other companies are converting war surplus aircraft for commercial and private use at Montreal and Toronto. Pratt & Whitney, Canadian Wright and Rolls-Royce have Canadian engine assembly and repair plants at Montreal. Many accessories, formerly imported, are now made in Canada.

Therefore, he assumed that high-powered surplus engines would cost one-half as much as new lower-powered engines and that the surplus engines could be operated 750 hrs, instead of 300 hrs between overhauls. On this he based a chart showing the relative direct operating expense of the two types of engines. At less than 100 miles—calculated angle for local operation—the new, lower-powered engines are cheaper to operate.

Canopy of Plastic Offers Good Vision

In one form or another, the "Big-eye" cockpit canopy developed by Douglas Aircraft Company, and exemplified on the C-14 Globemaster, shows promise of becoming a main for future transport designs, especially for very large aircraft where good visibility is difficult to attain.

The plastic bubble, which some pilots and airline engineers have assumed will contribute a mental barrier to the members subject to encyclopedic mobility is winning the confidence of all who have flown the C-14 or who have had hands-on demonstration at Douglas' Santa Monica plant.

No Climbing Rule—For both the 14-passenger plane, operators could make money at 80 percent load factor, with the larger aircraft,

course, producing the greater revenue. But the catch, as outlined by Howlett, is the potential traffic available.

The 14-passenger airplane begins making money at seven and one-half "payload units." The larger plane requires this point at slightly less than 13 units.

This means that in the eyes of Howlett the 14-passenger plane is the better bet for local operators attempting a new service in metropolitan. With it, they would have a greater chance of making money during the period necessary to build up traffic.

Thoughts on Power—Howlett also has some provoking thoughts on the use of surplus high-power engines in an attempt to achieve initial economy. The Stratovision will use either Wright 180 hp or Continental 650 hp engines. He points out that an economic axis would be possible only if the engines could be operated with lower fuel consumption. If their fuel cost would be far below new engines, and if the added power would increase operating speeds and gross weight.

Therefore, he assumed that high-powered surplus engines would cost one-half as much as new lower-powered engines and that the surplus engines could be operated 750 hrs, instead of 300 hrs between overhauls.

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EDO AIRCRAFT CORPORATION, 880 Second Avenue, College Point, Long Island, N.Y.

AVIATION NEWS • July 23, 1946



Based on "Bog-Eye," Radiac's departure is point cockpit canopy design. Set features the Douglas DC-3 Gladiators to appear at the head-on view.

expansion nose of the "moped up" canopy which may be expanded to result from either with one's hand or a bubble.

As used on the C-45, the "Bogey" goes the point a complete state of cockpit enclosure though excellent vision appears to the pilot arrangement and instrument panel located within the "Bogey." Low eyes are barely above the shoulder of the airman, and a slight downward glance shows the array of instruments and controls.

A second "Bogey" canopy is a fabric "share shield," which the pilot can attach across beneath the cockpit rim to enclose, as desired during the night, all radiation from instruments and cabin lights.

Safety Factor—Howard feels that the greatest advantage of the bulging canopy is the safety factor of unusual flight vision afforded the flight crew, pilot and co-pilot. Each can command 360 degrees vision in a forward sitting position, and excellent vision upward, and also down, in comparison with conventional transport cockpits.

AAF Experimental Contract Buett Menasco Backlog

Backlog of the Menasco Manufacturing Co. is now in excess of \$16,000,000, following a new experimental contract with the AAF for \$2,000,000. This contract is for work on gas turbine and jet engines, ex-

ploring a related activity that Menasco has been conducting for Lockheed Aircraft Corp.

Menasco's backlog now includes orders amounting to \$3,000,000 for hydroelectric turbines for both military and commercial aircraft, total value \$10,000,144 for winning machines and orders of \$400,000 for hydroelectric parts for hydroelectric, electric, and hydroelectric use.

Ryan Metal Products Makes Metal Canister Shells

Breakthrough of Ryan Aerocoupe Co.'s participation in non-aviation fields through its Metal Products Division has brought orders for \$10,000 worth of metal shells for canister manufacturers. Ryan will be in volume production of the orders by Fall.

The canister shells, of Ryan's own design, were recently shown to canister industry representatives at Kansas City. The heavy orders followed Ryan's recent placing of contracts with the canister industry to conduct a systematic study of potential non-aviation markets for its metal fabrication facilities.

For further information, contact:

Mr. W. H. Johnson, Sales Manager, Ryan Aerocoupe Co., 1000 West 12th Street, Los Angeles 15, Calif.

All of the company's consideration of expanding the field of sales for its metal products has been based on the desire to build permanent, and not temporary business, and to carry out their long period of customer needs starting volume orders can be obtained for a great many products.

Ryan's interest, however, is far beyond profit, and consequently the company has been chosen about entering the non-aviation field. In the aviation field, the Metal Products Division has large orders for exhaust manifold systems for several of the transports now in production. It also is working on high temperature alloy parts for jet propulsive engines.

Fairchild License

Fairchild Engine and Airplane Corp. has licensed British Perrett and Co., Ltd., de Javille, to manufacture plastic riveted bonded plywood under Duxwood, means whereby Fairchild holds. The contract runs for five years and the British company will use native materials



JET TEST ON MARK-82

Installation of a Pratt & Whitney R-4360-33 engine in the tail of a Menasco bomber has been made by The Glenn L. Martin Co. for experimental purposes. Object is to test jet engines under actual flight conditions. Air intake for the engine is in the rudder. The plane retains its two conventional engines. The tail rudder has been recessed so as to leave a clear space on the periphery of the jet engine strength a window installed in the fire-wall.

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PRODUCTION — 31

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DEAR FRIENDS, SEE W. A. L., IN PAGE 14

WESTERN AIR LINES
AMERICA'S PIONEER AIRLINE

Titan Aircraft Subsidiary Making Soft Drink Venders

Titan Industries, Inc., subsidiary of Titan Aircraft Corp., Van Nuys, Calif., has been developing on the first stage of a venture to do automatic Coca-Cola vending machines. The machines are being built for McIn Industries, Inc., of Chicago.

A second of Titan's own aircraft, a vintage cleaner of the company's own design, is expected to be put on the market early this Fall. Delay obtaining materials, particularly electric motors, has been holding back production of the cleaners. The motors are now produced within ten days.

McDonnell Aircraft Corp. Gum Confidential Contract

McDonnell Aircraft Corp. has been awarded a Government contract for \$1,360,000 involving a developmental program, Project J-9. McDonnell has announced. This is the third contract company has won since the end of the war. Backlog is now \$2,080,000.

Of the total backlog, McDonnell stated, 75 percent consists of fixed-price contracts, with 25 percent involving cost-plus-fixed-fee. This contrasts with the wartime situation when all of McDonnell's work was on CFFP, or \$15,000,000 worth of wartime CFFP business, McDonnell declared, the company's profit was less than \$100,000.

Brazilian Competition

RIO DE JANEIRO, Brazil (McGraw-Hill World News)—The Brazilian National Motor Works last month received its first order for aircraft parts—a mill from the Brazilian Air Force for spare parts for U.S. Wright engines.

It was filed in about two weeks, as compared with the four months it would have taken to obtain the parts from the U. S. Quality was stated equivalent to U. S. products.

New VHF Receiver

Aircraft Radio Corp., Division, N. Y., has developed a new model VHF receiver system for use on aircraft radio range systems now being installed by CAA. Unit price for experimental installation in small quantities is approximately \$1,000. Company states it is available for airline flight tests on the New York to Chicago range being constructed.

FINANCIAL

Aircraft and Equipment Equities Show Market Declines in 1946

Downward trend continues during first six months of year as air stocks fail to participate in periods of general market strength.

Aircraft and aircraft equipment equities have experienced substantial market declines during the first six months of 1946. This is reflected in an analysis of the results, last month, of representations of aviation stock prices at the midpoint year point.

The best 1946 prices were evidenced at the start of the year and continued a declining trend. Aircraft shares started their present downward move during the last few months of 1945. During periods of strength in the general market aircraft shares failed to participate.

Table Reveals Declines—Declines in market values range from 2.7 to 39.2 percent for the first half. As revealed in the accompanying table, the average drop is around 25 percent. There appears to be no particular distinction between the market rates of the drama builders and the equipment manufacturers.

The sharpest drop was experienced by Curtiss-Wright equities with a decline of 34.2 percent. This action can be attributed to the passing of the dividend earlier this year on the "A" stock. The most recent stock adjustment to the Thompson group with a decrease of only 2.7 percent. The company's earnings appear to have held up much better than the rest. A remarkable refinancing of the capital structure was recently completed.

Piper Aircraft with a decline of 38.2 percent reflects the sale of additional stock which proved a depressing influence on the existing equity. Moreover, the company's earnings have proved very disappointing thus far this year.

Aviation Corp. Slides—The Aviation Corp. common stock declined 34.7 percent during the first half and is closely paralleled by the actions of Consolidated Vultee which dropped 37.1 percent. The latter is the main aircraft investment of

cycle complete—it is possible, however, that this impulsive cycle may have been completed for the aircraft group. The fact that prices are so debilitated from former high levels encourages the attraction of estate investors. Most of the reconsolidation problems facing the industry are known and a definite pattern appears in evidence as to which companies may be expected to participate in post-war business.

Probably the greatest continuing influence is present in the healthy financial position of the leading aircraft companies. For example, Boeing Airlines has net assets of over \$40 per share and is currently selling around \$12.

Aerospace Imported—Profits for the industry, as a group, will probably continue unfavorably to international. An important factor will be present in the associated policies followed. If initial development and production costs of new models are charged to current earnings, operating losses are probable. However, if reconsolidation and development costs are charged to research, substantial profits may very well appear. Tax carryover credits and lower tax rates should help.

There is increasing evidence that investment advisory services are beginning to take a more optimistic view of selected aircraft issues at current levels in the light of their severe market deflation.

Recently, Standard & Poor's Corp. favorably regarded the following as having speculative appeal: Boeing, Consolidated Vultee, Fairchild Camera, Grumman, Lockheed, Martin, Republic.

MARKE RATES—FIRST HALF, 1946
LEADING AIRCRAFT AND EQUIPMENT COMMON STOCKS

	High	Low	2000 Div.	Fwd.	2000 Div.
Aerospace Corp.	145	85	250	281	
Boeing	100	65	350	37	
Bell	100	55	250	26.6	
Republic	100	55	175	17.1	
Stearman	100	55	250	25.1	
Curtiss-Wright	100	55	250	25.1	
Curtiss-Wright	100	7	75	28.8	
Douglas	100	45	250	25.1	
Fairchild Powers	100	45	250	25.1	
Fairchild Powers	100	42	275	22.8	
Grumman	100	35	250	25.1	
Lockheed	100	35	250	25.1	
Martin	100	35	250	25.1	
Republic	100	35	250	25.1	
Stearman	100	35	250	25.1	
Varo	100	35	250	25.1	
Yerkes	100	35	250	25.1	
Transocean Products	100	35	250	25.1	
Douglas Aircraft	100	25	250	25.1	
Curtiss Air Products	100	25	250	25.1	

TRANSPORT

Expect CAB Ruling on Mail Pay Will Give 25 Cent Rate to Feeders

New lines will need higher rate to break even; present conditions indicate sufficient applications gained too rosy picture of traffic available.

Although CAB probably will set an initial mail rate of 25 cents a plane mile for the new feeders, certificates in recent area decisions, themselves increasing doubt it will be able to hold that line.

A number of factors contribute to this optimism. Applications for certificates were made in both times and were based on optimistic analysis of potential maximum traffic potential, rather than actual traffic expectations.

Some lines plan to use larger equipment that has become available since their agents were presented to the Board. Costs of equipment, labor and materials are going up.

Smaller Operators — The smaller the system, the less mileage there is over which operating costs can be spread, and the Board's borderline authorization has been less extensive in each case than was sought by the applicants.

Thus far, only one of the seven feeders, certified for three years in the Rocky Mountain, West Coast, Florida and New England regional areas has applied for a temporary mail rate. None have started operations, and mail pay applications are not expected before service begins.

The pattern was established with Pioneer Airlines (formerly Ransy), which operates under a 25 cent mail rate set last February—18 cents a mile below what it requested. Its final rate, when fixed later, will be reduced to 14 cents, 1948 when the line starts service.

The carrier has not objected to the 25 cent rate, preferring to withhold presentation of its case until the Board is ready to set the final figure.

Pioneer Needs 45 Cents — But its research for the first five months of 1948 show it will need 48 cents a mile mail pay to break even. This is an significant contrast with the seven carriers yet not operating, whose estimates of mail pay need

vary from 24-29 cents a mile to 34, and average 19.18 (not accompanying table). The significance lies in the fact that Pioneer's figures come from actual operation, the others necessarily are speculative.

It is a virtual certainty that the new feeders will seek CAB for certificate after operations start. A request for higher mail pay appears reasonable. Today probably will be the day the effective starting date of the new rates will be named for which each is certified.

Such a request already has come from Pioneer, which asks either a three- or five-year extension, blunting court action by Braniff Airways and wartime difficulties for its delay from September, 1945, to August, 1948, in starting operations. Otherwise, Pioneer's certificate will expire Dec. 31, 1948. Examiner P. Morris Haskin has recommended that the extension be granted for at least three years after Aug. 1, 1948. The carrier also seeks authority to conduct passenger flights without awards service on heavier-traveled portions of its AM #4, all of which lies within Texas.)

Pioneer Reports — All American Aviation operated about 18 months before its mail rate was established, but it is doubtful that new operators will wish to spend the interim expense such a delay entails. Pioneer,

then known, filed its mail pay application after about a month of operation.

For the year to June 1, Pioneer reports total operating revenues of \$177,000, or 49.61 cents per revenue mile, of which \$69,749, or 24.36 cents per mile, was passenger and \$83,815, or 24.90 cents per mile, was mail revenue. Total expenses for the period of \$190,540, or 59.97 cents a revenue mile, left an operating loss of \$13,544, or 21.36 cents a mile.

The Texas line, which amounts it is to "the most difficult mail route in the country," has 133 route miles. A CAB examiner has recommended 1,567 more. Data compiled by Pioneer shows its present operations are too small to permit maintenance and operation of a maximum amount of equipment without a high rate of mail pay. "We have to have a minimum operation," Pioneer says, "and that one is too small."

Cessions at CAB — The whole feeders mail pay question is creating considerable concern at CAB. In its last hearing and picking decisions two years ago, the Board governed to keep a tight rein on mail pay for new entries, although it did tend to go along with the recommendations of the commission that 25 cents be the top limit. Such an arbitrary restriction, CAB said, was liable to the practice of Congress. But Board agreed here today it clear since the decision that the implication was intended that 25 cents was the top for temporary mail pay.

While the Texas-Gulfcoast area case was being argued recently, member Jack Lee again demanded mail pay testing that the Board would be prepared to consider new feeders. Member Haskin Branch was conciliatory, and seemed especially concerned about Pioneer's losing money with a 25 cent temporary mail rate. It indicated, he said, that mail revenues are low. Public counsel thought

Carrier	Pioneer	Carrier Mail Pay Requirements (Based on October '47 Estimate to CAB)			
		Non-Mail Equipment Fleet	Mail Equipment Fleet	Revenues Plane Mile	Mail Pay Plane Mile
Region*		Locomotives	34 TL	59.67	45.16
Midwest		12 TL			
Midwest	Braniff	14.00	51.00	34.00	
Midwest	Braniff	24.41	44.41	32.11	
West Coast	Braniff	10.30	64.00	36.41	
Southwest	Braniff	34.19	50.90	25.18	
Southeast	Braniff	10.30	50.90	7.80	
Florida	Braniff	10.17	50.90	7.71	
Florida	Braniff	30.37	50.90	9.99	

*Total feeder operating. Figures based on first five months of 1948.
**Based on mid-month, including Braniff, will use larger equipment than proposed
in C-15.

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Continental Air Lines Serves Sears, Roebuck

Continental Air Lines completes the purchase of every one of its six flights daily from Kansas City to Denver with freight for Sears, Roebuck customers in Denver, Colorado Springs and Pueblo. This air freight business already has grown to such proportions that Continental is preparing a C-47 to fly a freight run between Kansas City and Denver.

The management gives Sears customers in the three Colorado cities a service not more than 14 hrs and usually not more than 12 between the company's Kansas City warehouse and their homes. The flights to two weeks previously record handicapped the shipper in its competition with Montgomery Ward, which has a big retail store and warehouse for mail orders in Denver.

Delays taken by Sears in the three Colorado cities up to 3 hrs each day are attributed to Kansas City and the goods packed in the air field for loading at cargo space is available, usually up to 1,000 lbs a ship. At Denver, the shipments are distributed to customers' homes by Sears trucks directly from the field, those for Colorado Springs and Pueblo leaving on the next flight north. Recent items handled so far was a staircase weighing 300 lbs.

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For "Catalog" Register Colorado return of Sears, Roebuck are returning overnight delivery on shipments from the company's Kansas City warehouse via Continental Air Lines. Picture shows a group of officials loading 1,200 lbs of "candy" purchases on a C-47 plane at Kansas City to start the service.

The shipments are handled by Continental on its new tariff which begins at 35 cents a pound and scales down to 20.5 cents for 4,000 lbs or more. Sears charges the customer a delivery charge of 15 cents for 5 lbs, up to 15 cents per 100 lbs. The cost is more than parcel post by which most Sears items formerly were delivered from Kansas City, and the delivery charge does not quite cover cost of the service to Sears, but the mail order house thinks consumer satisfaction makes up for the difference.

Continental figures it can extend the service to other and more remote western communities as soon as they are connected by wire with Denver through facilities now being made ready. John A. Read, new manager of sales and manager, and James E. Pitt, manager of rail promotion at Denver, worked out the arrangement, which Read calls an "airborne salesmen shopping service."

Pogos Has Office

Office space in the Carlton hotel, Washington, has been taken by E. Welch Pogue, former chairman of CAR, and George Neal, formerly the Board's general counsel. Neal left the Board July 1 and Pogue 18 days later after his successor, James H. LaRue, was sworn in. Pogue and Neal returned to enter private law practice, but under CAR rules, neither may appear before the Board in connection with any proceeding that was under Board consideration while he was at CAR.

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EDITORIAL • • • • •

Feeder Line Expansion and FAA

RECENT ORGANIZATION by CAB of 1,000 miles of feeder airline routes for seven new carriers, with other favorable decisions pending, points up the annual meeting of Feeder Airlines Association, scheduled for Aug. 5 in Washington, as the group's most important conference. The executive committee of FAA has outlined an active program for the next year, which will be approved by the membership next month.

The primary problem of the Association is its transition from an organization of applicants to one of operators. Presently, FAA has 18 strong members. Four have already been certified as carriers. Four more have been recommended by examiners, and several others will undoubtedly receive federal approval. Other new memberships in the Association are imminent.

FAA was organized only two years ago by a progressive group of CAB applicants as a medium of collective expression and action. Top priority was assigned to securing interest in Washington in establishing a secondary short-haul air transport system which would supplement existing trunk airlines.

Immediately after its formation, the Association appointed a technical committee which drew up specifications for an aircraft which would meet the requirements and special conditions encountered in short-haul mail field operation.

Three major manufacturers have designed feeder craft following the committee's general specifications as closely as possible. FAA executives point out, and there is a possibility that two others will enter the field with models for which plans are already completed, although no work on mock-up or prototype has been completed.

In its early history, restricted mainly to peninsular airlines, the Association otherwise has concentrated wisely on the necessarily intangible problems of information and education in Washington, a field which the senior and large trunk airlines ignored for so many years, yet were per-

plexed at the lack of understanding of their problems.

To date, the Association has been financed mainly by the support of its united membership. No individual company derives any direct benefit. Yet the Association's program has been carried on in the interest of all independent applicants, members or not.

The annual meeting is expected to attract CAB Chairman Landis and other CAB representatives, officials of the Aircraft Industries Association, spokesmen for CAA, the Post Office Department, radio specialists from the industry and Aerostandard Radio, Inc., and at least four manufacturers—Beech, Boeing, Consolidated, and Lockheed. Discussions will include Parts 40 and 61 of the Civil Air Regulation and their application to short-haul airlines, possibility of simplifying and setting up new regulations for feeder operations, airmail problems and procedure, radio technologies, and the vital subject of the Association's future program.

The next several years will bring discouraging problems. Some even now appear insuperable. There are skeptics regarding the economic and operational impracticality of a self-supporting feeder airline system. Nevertheless, CAB will continue to grant new certificates in coming months. *Airways News* has already forecast a 25,000-mile-wide network after the last decisions of the eleven regional cases has been handed down. That's nearly four times the mileage which has already been granted, although none is yet in operation. The FAA is worthy of the closest support and cooperation from all aviation interests in the trying period ahead. The present American airline network was not built by skeptics and doubt, but the early trailblazers worked severer, important and costly years lacking the unity and cooperation of an organized industry. The feeder carriers have the opportunity to start as a strong organization to meet common problems together.

ROBERT H. WOOD

AVIATION NEWS • July 22, 1946



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The tip about men got passed on to over a million men. They're grateful. They go for *true*, the Man's Magazine, from cover to cover. They like the adventure, sports, humor, mystery, Westerns, science stories — especially because every word is TRUE to TRUE.

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NEW PLANES FEATURED AT OPENING OF G-E FLIGHT LAB



Visitors inspect a helicopter and a B-24 in front of one of the buildings used for electronic and armament research



A Navy MARS flies over one of the laboratory's test planes in which a gas turbine is installed for experiments

Many of the newest Army, Navy, and commercial planes demonstrated what they could do recently before an audience of thousands of people, when G.E. dedicated its new flight-test headquarters—established for the purpose of furthering new developments in equipment for aviation. It was the largest assemblage of new planes yet seen in one place—and many of these planes carried G-E equipment.

Some of the newest equipment on the war planes never saw combat, and work on it will continue in co-operation with the armed forces here at the Schenectady airport. On the large transport and commercial planes—Strato-cruiser, Constellation, and Globemaster—G-E electric equipment, such as generators and other power devices, will be used in quantity as the manufacture of these huge ships gets under way.

Accomplishments of the G-E Flight-test Division will enable many planes of the future to outstrip all previous records. Here our engineers will gladly discuss with you the application of all types of electric equipment. *Apparatus Dept., General Electric Company, Schenectady 5, N.Y.*



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